WHAT IS CLAIMED IS:

1. A photovoltaic element comprised of a semiconductor-junctioned element, characterized in that said element includes a first electrically conductive type semiconductor layer, a non-crystalline i type semiconductor layer, a microcrystalline i type semiconductor layer and a microcrystalline second electrically conductive type semiconductor layer, and is pin-junctioned.

2. A photovoltaic element according to Claim 1, characterized in that said semiconductor layers comprise chiefly silicon.

3. A photovoltaic element according to Claim 1, characterized in that said non-crystalline i type semiconductor layer includes germanium.

4. A photovoltaic element according to Claim 1, characterized in that said element has a plurality of pin junctions.

5. A photovoltaic element according to Claim 1, characterized in that said second electrically conductive type semiconductor layer is located on the light incidence side.

6. A photovoltaic element according to Claim 1, characterized in that said second electrically conductive type semiconductor layer is a p type layer.

7. A photovoltaic element according to Claim 1, characterized in that the layer thickness of said microcrystalline i type semiconductor layer is 50 to 100 Å.

8. A photovoltaic element according to Claim 6, characterized in that the layer thickness of said microcrystalline p type semiconductor layer is 80 to 150 Å.

9. A photovoltaic element according to Claim 6, characterized in that the density of the impurity in said microcrystalline p type semiconductor layer is 10^{21} atoms/cm^3 or greater on the outermost surface, and said density of the impurity decreases toward said microcrystalline i type semiconductor layer.

10. A photovoltaic element according to Claim 1, characterized in that an area of said microcrystalline i type semiconductor layer in which the atomic density is 10^{18} atoms/cm^3 or less has a thickness of at least 30 Å.

11. A method of manufacturing a photovoltaic element characterized by forming a first electrically conductive type semiconductor layer on a long substrate, forming a non-crystalline i type semiconductor layer thereon, forming a microcrystalline i type semiconductor layer thereon by the high frequency plasma CVD method, and forming a microcrystalline second electrically conductive type semiconductor layer thereon by the high frequency plasma CVD method.

12. A method according to Claim 11, characterized in that SiH_4 and H_2 are used as raw material gas for the formation of said microcrystalline i type semiconductor layer, the amount of supply of said H_2 to said SiH_4 is 50 times or greater, and the magnitude of high frequency electric power applied to said raw material gas is 0.2 W/cm^2 or greater.

13. A method according to Claim 11, characterized in that SiH_4, H_2 and BF_3 are used as raw material gas for the formation of said microcrystalline second electrically conductive type semiconductor layer, the amount of supply of said H_2 to said SiH_4 is 50 times or greater, the amount of supply of said BF_3 to said SiH_4 is 10 to 50%, and the magnitude of high frequency electric power applied to said raw material gas is 0.01

to 0.03 W/cm^2.

14. A method according to Claim 11, characterized in that the formation temperature of said microcrystalline i type semiconductor layer is below the formation temperature of said non-crystalline i type semiconductor layer, and the formation temperature of said microcrystalline i type semiconductor layer is 180 to 240°C.

15. A method according to Claim 11, characterized in that said non-crystalline i type semiconductor layer is formed by the microwave plasma CVD method.

16. A method according to Claim 11, characterized in that said non-crystalline i type semiconductor layer has an i type layer formed by the microwave plasma CVD method, and an i type layer formed by the high frequency plasma CVD method.

17. An accumulated film forming apparatus for continuously accumulating a plurality of semiconductor layers on a long substrate by the plasma CVD method, characterized by at least a first accumulation chamber having means for making raw material gas flow from the upper part toward the lower part in the direction of movement of said long substrate, and a second

accumulation chamber having means for making the raw material gas flow from the lower part toward the upper part in the direction of movement of said long substrate, said first accumulation chamber and said second accumulation chamber being connected together by a separating path.

18. An accumulated film forming apparatus according to Claim 17, characterized in that the area of an electrode in at least said second accumulation chamber for applying electric power for causing plasma is larger than the area of said long substrate in said accumulation chamber.

19. An accumulated film forming apparatus according to Claim 18, characterized in that said electrode is fin-shaped.

20. An accumulated film forming apparatus according to Claim 18, characterized in that said electrode is enclosure-shaped.

21. An accumulated film forming apparatus according to Claim 18, characterized in that the potential of said electrode is positive relative to said long substrate.

22. An accumulated film forming apparatus according to Claim 17, characterized in that a portion for supplying said raw material gas into said accumulation chambers has a member for shielding said long substrate from the flow of said raw material gas.

23. An accumulated film forming apparatus for forming accumulated film by the plasma CVD method, characterized in that the area of an electrode for applying electric power for causing plasma is larger than the area of a substrate in an accumulation chamber.

24. An accumulated film forming apparatus according to Claim 23, characterized in that said electrode is fin-shaped.

25. An accumulated film forming apparatus according to Claim 23, characterized in that said electrode is enclosure-shaped.

26. An accumulated film forming apparatus according to Claim 23, characterized in that the potential of said electrode is positive relative to said substrate.

27. An accumulated film forming apparatus

according to Claim 23, characterized in that a portion for supplying raw material gas into said accumulation chamber has a member for shielding said substrate from the flow of said raw material gas.